OJCS 4185-75

MEMORANDUM FOR: Chief, DD/I Management Staff

THROUGH : Director, Central Reference Service
Director of Joint Computer Support

SUBJECT : SAFE FY-76 Budget Allocation

The net result of reprogramming the FY-76 budget from
$3.0 million to the $1.598 million level will be to delay
system design and scheduled date of RFP's for the system hard-
ware and software and subsequent events by approximately five
months due to the increased load to be carried by Agency per-
sonnel. Neither function nor design integrity will be compro-
mised although a risk of minor additional delays is increased
as studies in key areas are limited and analysis of system
performance is stretched out.

The planned allocation of budget for FY-76 is divided
into five categories as follows:

I. General Technical and Administrative Support

A. Consultant Panel – The panel of educational
and industrial experts will be convened twice
to review requirements and system design and
to pass recommendations on to the development
and management organization. This advice
will help ensure that advantage is taken of
current related work and that no undue risks
are invoked.   15,000

B. Contract Employees – Four contract personnel
will be used for nine months to cover areas
of technical expertise not available within
the Agency. This will be primarily in sys-
tem design and analysis with some secondary
help in specialty areas such as data manage-
ment, terminal design and mass storage sys-
tems.   144,000

C. Staff Travel – Trips are required to vendors
and potential vendors' plants to evaluate
contract performance and current technology.   22,500

D. Interim Safe Support - Maintenance level support is required for interim SAFE. Funding will permit fixing of problems including an absolute minimum of performance improvements to keep the system viable. 16,000

TOTAL CATEGORY I 126,000

II. System Design

The needs of the analysts, the size of the files, the number of users, and the functions of the system drive the design in several technical directions. In order to ensure that the correct path is taken in system architecture, several architectures must be evaluated in some depth against the requirements. Parallel design contracts will be let for development of candidate system architectures which will then be analyzed for overall performance, integrity and flexibility.

TOTAL CATEGORY II 432,000

III. System Element Studies

Regardless of the system architecture used, there are a number of areas requiring study at the earliest possible date to avoid their becoming delaying factors or causing re-design as the program progresses. These studies will lead to design approaches which will be adapted to the architecture used.

A. Communications System - To review broad-band, multi-channel and conventional communications in the light of SAFE Requirements and design a system which will satisfy the need in a cost-effective manner with a minimum of risk. 144,000

B. Terminal Work Station - To translate the requirement into candidate work station designs to permit cost/function trade-off for the final (modular) terminal selection. 95,000

C. Remote Document Viewing - To evaluate candidate remote document viewing systems such as Computer Input Microfilm, Video File and conventional micro-form systems to find cost-effective short and long-range facilities. In particular, the technology is changing in this area, and it would be expensive to pick a wrong branch on the evolutionary tree.   75,000

D. Software Search Techniques - To evaluate the maximum potential performance of software text/file search techniques in conventional processors. We must know this as it is an available technique though limited in conventional configurations. It may become more powerful in highly parallel systems.   15,000

E. Hardware Search Techniques - While the potential may be there for very efficient searches using special processors, it has not been analyzed for the precise SAFE requirements, and it is unclear just how this potential could be harnessed. Some benchmarks should be performed on existing hardware.   75,000

F. Generalized Search Techniques - To analyze the specific search specification of SAFE and, using any reasonable hardware/software combination, determine the maximum performance possible and outline a system solution to the SAFE search problem.   125,000

G. Data Management - Design an integrated data management system which will handle all the file types and usages envisioned by SAFE in real time. This may be an augmentation of an existing system but will involve defining additional development as no current system meets the need.   90,000

TOTAL CATEGORY III   619,000

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IV. Experimental Test of Existing Systems

There exist systems, some elements of which are applicable to SAFE Needs. They are in varied states of development and some are still research tools. Experience on a small number of these will determine how directly they are applicable and may save needless development and should avoid duplicate development.

A. Stanford Research Institute - Lease time on the SRI system (using a terminal in Washington) to evaluate the effectiveness of both the system design as it would be useful in SAFE and the work station concept of Dr. Englebart. This work appears to be highly relevant and may save a great deal of development effort later, but at least will provide direction in system design.
45,000

B. University of Illinois PLATO - Terminal and system designed for many users having a sophisticated, multi-function terminal. The use of time on this system will aid terminal design and provide guidelines for communications and system design.
12,500

C. Work Station (Xerox) - One terminal required for independent experimentation in the areas of human factors, manipulative facility, text editing, file building and general utility of the terminal concept. It may be the terminal which could be "sub-set" for a modular terminal design to keep cost in line on this high-volume item. Might be purchase, lease or loan.
30,000

TOTAL CATEGORY IV
87,500

V. Analytical Support of System Design

Through the above activities, constant analysis of resulting designs will be required in two areas - Reliability and Performance. This will be done by separate contracts to avoid the results of the analysis reflecting the bias of the designer.

A. Reliability Analysis of Candidate Systems   60,000

B. Performance Analysis of Candidate Systems   175,000

Additionally, it is necessary to define analytical methodologies which will become available to analysts to ensure that the system design will accommodate them as they are developed.   20,000

TOTAL CATEGORY V   255,000

VI. Facility Preparation

Due to the delay encountered in RFP dates and final system definition, the site will not be required until First Quarter FY-78 and thus no funds will be required in FY-76.

Summary: The total planned expenditures is -- $1,589,000
This is the minimum figure which will permit effective trade-off of time for immediate cost without incurring inadvisable risk through lack of investigation and analysis.

Project Director/SAFE

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cc: DD/A
     D/OJCS
     D/CRS

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